

## Appendix A

### Ecological Sections and Subsections Map

# Ecological Classification System Sections And Subsections

USDA Forest Service  
Daniel Boone National Forest  
Kentucky  
2002

**Cumberland Mountains**


- Pine & Cumberland Mountains (M221Ce)
- Southern Cumberland Mountains (M221Cd)
- Western Coal Fields (M221Ca)

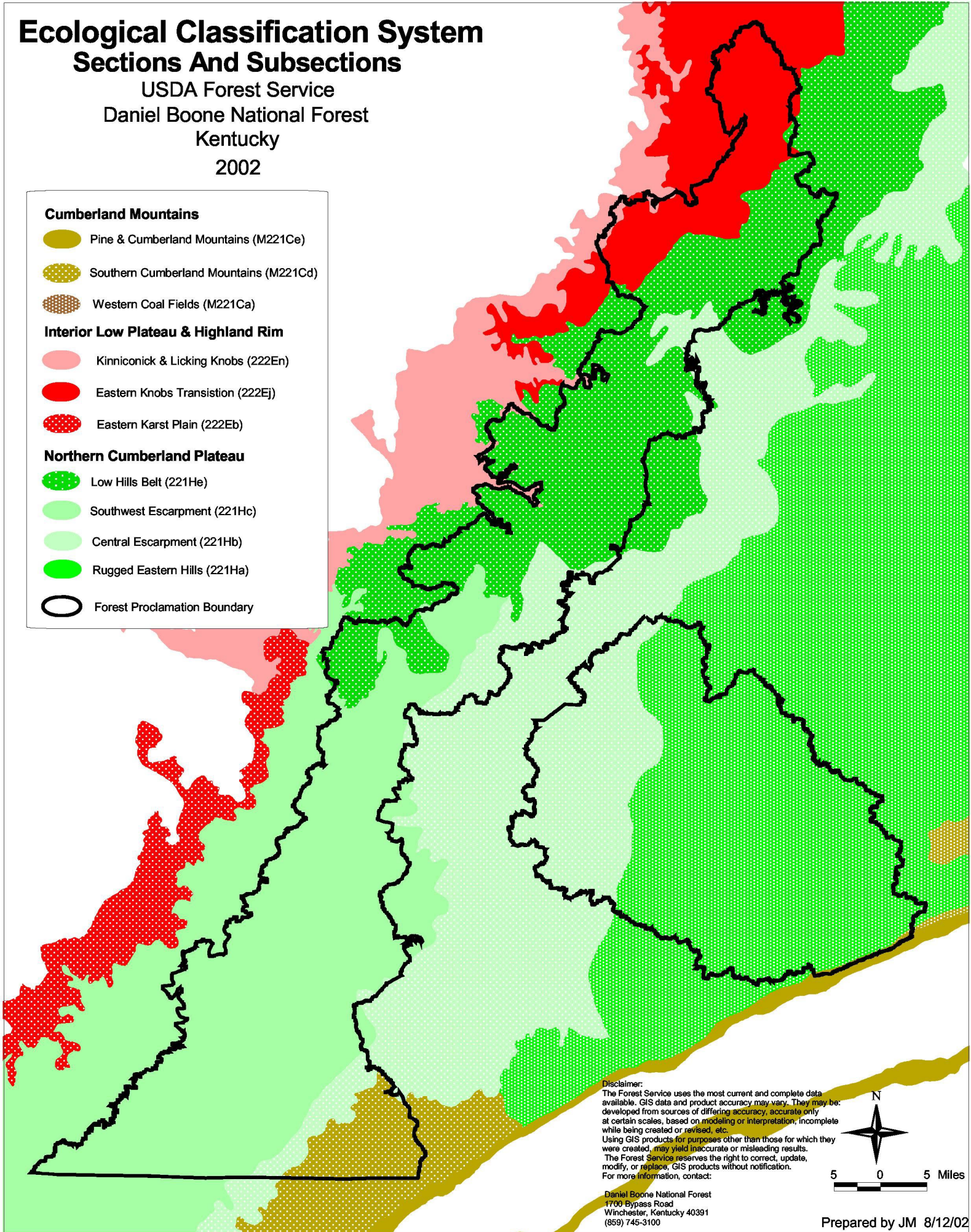
**Interior Low Plateau & Highland Rim**

- Kinniconick & Licking Knobs (222En)
- Eastern Knobs Transistion (222Ej)
- Eastern Karst Plain (222Eb)

**Northern Cumberland Plateau**

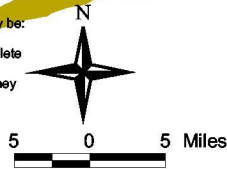
- Low Hills Belt (221He)
- Southwest Escarpment (221Hc)
- Central Escarpment (221Hb)
- Rugged Eastern Hills (221Ha)

 Forest Proclamation Boundary



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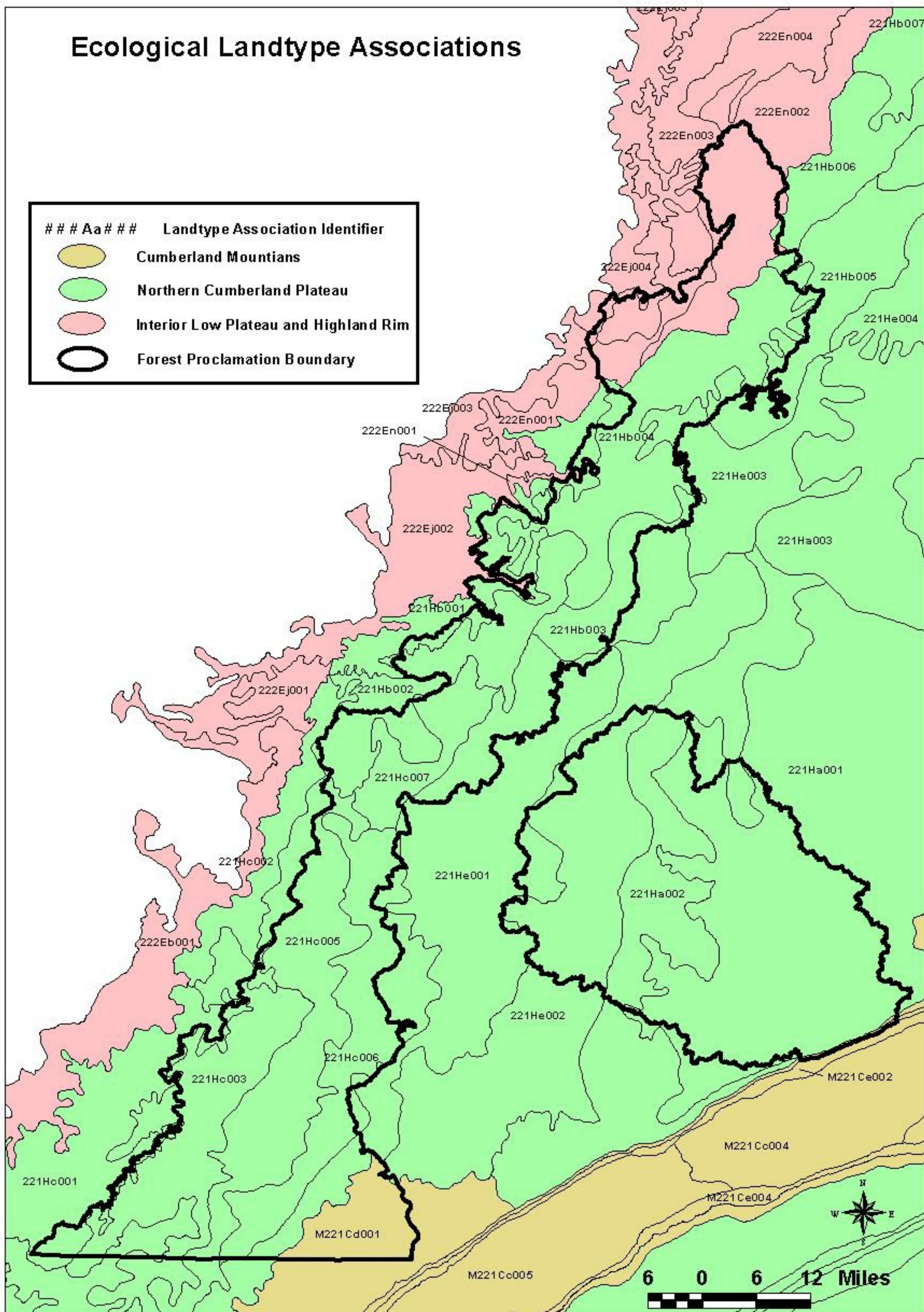
## Appendix B

### Ecological Landtype Associations Map



# Ecological Landtype Associations

- ### Aa### Landtype Association Identifier
- Cumberland Mountains
  - Northern Cumberland Plateau
  - Interior Low Plateau and Highland Rim
  - Forest Proclamation Boundary





## Appendix C

### DBNF Short List (Potential Species at Risk)

07/15/2003

*DBNF Short List (Potential Species at Risk), January 7, 2002*

<i>Habitat</i>				<i>DBNF</i>	<i>Selection</i>
<i>Group</i>	<i>Class</i>	<i>Species</i>	<i>Common_Name</i>	<i>Status</i>	<i>Criterion</i>
Aquatic	AMPHIBIAN	Necturus maculosus	Mudpuppy	-	7
		Cryptobranchus a. alleganiensis	Eastern Hellbender	CS	3
	CRUSTACEAN	Cambarus bouchardi	Big South Fork Crayfish	S	2
		Crangonyx anomalus	Anamulus Spring Amphipod	SH	6
		Crangonyx packardi	Packard's Cave Amphipod	SH	6
		Eubbranchipus neglecta	Neglected Fairy Shrimp	CS	3
		Orconectes australis packardi	Packard's Southern Crayfish	CS	3
		Staeptocephalus secti	Springtail Fairy Shrimp	-	6
		Stygobromus exilis	Central Kentucky Cave Amphipod	SH	6
	FISH	Acipenser fulvescens okasis	Lake Sturgeon	S	2
		Ambloplites rupestris	Rock Bass	-	7
		Ammocrypta clara	Western Sand Darter	CS	3
		Ammocrypta pellucida	Eastern Sand Darter	S	2
		Aplodinotus grunniens	Freshwater Drum	-	7
		Campostoma anomalum	Central Stoneroller	-	7
		Catostomus commersoni	White Sucker	-	7
		Clinostomus elongatus	Redside Dace	CS	3
		Cottus carolinae	Banded Sculpin	-	7
		Cyprinella (Notropis) galactura	Whitetail Shiner	K	7
		Erimystax (Hybopsis) insignis	Blotched Chub	CS	3
		Esox masquinongy	Muskellunge-Native Population only	G	3
		Etheostoma blennioides	Greenside Darter	-	7
		Etheostoma caeruleum	Rainbow Darter	-	7
		Etheostoma camurum	Bluebreast Darter	-	7
		Etheostoma cinereum	Ashy Darter	S	2
		Etheostoma flabellare	Fantail Darter	-	7
		Etheostoma maculatum	Spotted Darter	S	2
		Etheostoma nigrum nigrum	Johnny Darter	-	7
		Etheostoma obeyense	Barcheck Darter	-	7
		Etheostoma percnurum	Duskytail Darter	E	1
		Etheostoma rafinesquei	Kentucky Snubnose Darter	-	7
		Etheostoma sagitta spilotum	Arrow Darter	CS	3/7
		Etheostoma susanae (nigrum susanae)	Cumberland Johnny Darter	C	2
		Etheostoma tippecanoe	Tippecanoe Darter	S	2
		Etheostoma virgatum	Striped Darter	-	7
		Etheostoma zonale	Banded Darter	-	7
		Hypentelium nigricans	Northern Hogsucker	-	7
		Ichthyomyzon bdellium	Ohio Lampery	CS	3
		Ichthyomyzon fossor	Northern Brook Lamprey	CS	3
		Ichthyomyzon greeleyi	Mountain Brook Lamprey	S	2
		Ictalurus punctatus	Channel Catfish	G	7
		Lampetra appendix	American Brook Lamprey	CS	3
		Lepomis cyanellus	Green Sunfish	-	7
		Lepomis gulosus	Warmouth	-	7
		Lepomis macrochirus	Bluegill	G	7
		Lepomis megalotis	Longear Sunfish	-	7
		Luxilus (Notropis) chrysocephalus	Striped Shiner	-	7

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<i>Group</i>	<i>Class</i>	<i>Species</i>	<i>Common_Name</i>	<i>Status</i>	<i>Criterion</i>
Aquatic	FISH	Micropterus dolomieu	Smallmouth Bass	G	7
		Micropterus salmoides	Largemouth Bass	G	7
		Moxostoma macrolepidotum	Shorthead Redhorse	-	7
		Nocomis micropogon	River Chub	-	7
		Notropis albizonatus	Palezone Shiner	E	1
		Notropis sp.4	Sawfin Shiner	S	2
		Noturus stigmosus	Northern Madtom	CS	3
		Percina burtoni	Blotchside Logperch	S	2
		Percina caprodes	Logperch	-	7
		Percina evides	Gilt Darter	CS	3
		Percina flavescens	Yellow Perch	-	7
		Percina macrocephala	Longhead Darter	S	2
		Percina squamata	Olive Darter	S	2
		Phoxinus cumberlandensis	Blackside Dace	T	1
		Polydon spathula	Paddlefish	CS	3
		Pomoxis annularis	White Crappie	-	7
		Stizostedion canadense	Sauger	K	7
		Stizostedion vitreum	Walleye-native populations only	G	7
		Typhlichthys subterraneus	Southern Cavefish	S	2
	GASTROPOD	Leptoxis praerosa	Onyx Rocksnail	S	2
		Lithasia armigera	Armored Rocksnail	CS	3
		Pleurocera curta	Shortspire Hornsnail	CS	3
		Rhodacme elatior	Domed Ancyloid	CS	3
	INSECT	Cheumatopsyche helma	Helma's Net-spinning Caddisfly	S	2
	MUSSEL	Alasmadonta marginata	Elktoe	CS	3
		Alasmidonta atropurpurea	Cumberland, Elktoe	E	1
		Anodontooides denigratus	Cumberland Papershell	CS	3
		Cumberlandia monodonta	Spectacle Case	S	2
		Cyprogenia stegaria	Fanshell	E	1
		Dromus dromas	Dromedary Pearlymussel	E	1
		Epioblasma brevidens	Cumberlandian Combshell	E	1
		Epioblasma capsaeformis	Oyster Mussel	E	1
		Epioblasma florentina florentina	Yellow-blossom Pearlymussel	E	1
		Epioblasma florentina walkeri	Tan Riffleshell	E	1
		Epioblasma obliquata obliquata	Catspaw	E	1
		Epioblasma torulosa	Northern Riffleshell	E	1
		biloba (t.rangiana)			
		Epioblasma torulosa torulosa	Tubercled-blossom Pearlymussel	E	1
		Epioblasma triquetra	Snuffbox	S	2
		Fusconaia subrotunda	Long-solid	CS	3
		subrotunda			
		Hemistena lata	Cracking Pearlymussel	E	1
		Lampsilis abrupta	Pink Mucket	E	1
		Lampsilis ovata	Pocketbook	CS	3
		Lasmigona subviridis	Green Floater	S*	2
		Obovaria retusa	Ring Pink Mussel	E	1
		Obovaria subrotunda	Round Hickorynut	S	2
		Pegias fabula	Little-wing Pearlymussel	E	1
		Plethobasus cicatricosus	White Wartyback	E	1
		Plethobasus cooperianus	Orange-foot Pimpleback	E	1
		Plethobasus cyphus	Sheepnose	S	2
		Pleurobema clava	Clubshell	E	1
		Pleurobema oviforme	Tennessee Clubshell	S	2
		Pleurobema plenum	Rough Pigtoe	E	1

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Aquatic	MUSSEL		Pleurobema rubrum (pyramidatum)	Pyramid Pigtoe	CS	3
			Ptychobranhus subtentum	Fluted Kidneyshell	C	2
			Quadrula cylindrica cylindrica	Rabbitsfoot	CS	3
			Quadrula sparsa	Appalachian Monkeyface	E	1
			Simpsonaias ambigua	Salamander Mussel	S	2
			Toxolasma lividus	Purple Lilliput Pearlymussel	S	2
			Villosa liensoa	Little Spectaclecase	CS	3
			Villosa trabalis	Cumberland Bean Pearlymussel	E	1
		P-DICOT	Nymphaea odorata	Southern Fragrant Waterlily	CS	3
			Podostemum ceratophyllum	Riverweed	CS	3
		P-LIVERWORT	Jubula pensylvanica	Liverwort	SH	6
		P-MONOCOT	Orontium aquaticum	Goldenclub	CS	3
			Potamogeton pulcher	Spotted Pondweed	CS	3
			Valisneria americana	Eelgrass	SH	6
	Seeps/ Wetlands	CRUSTACEAN	Cambarus batchi	Bluegrass Crayfish	S	2
		INSECT	Manophylax butleri	Cliff Caddisfly	S	2
		P-DICOT	Bartonia virginica	Yellow Screwstem	CS	3
			Boykinia acontifolia	Brook Saxifrage	CS	3
			Chrysosplenium americanum	American Golden-saxifrage	CS	3
			Hydrocotyle americana	American Water-pennywort	CS	3
			Hypericum crux-andreae	St. Peter's-wort	CS	3
			Lobelia nuttallii	Nuttall's Lobelia	CS	3
			Parnassia asarifolia	Kidney-leaf Grass-of-Parnassus	CS	3
			Sabatia campanulata	Slender Marsh-pink	CS	3
			Vernonia noveboracensis	New York Ironweed	CS	3
		P-FERN	Lycopodiella appressa	Southern Bog Club-moss	CS	3
		P-LIVERWORT	Telerania nematodes	A Liverwort	SH	3/6
		P-MONOCOT	Calamagrostis porteri ssp. porteri	Porter's Reed Grass	CS	3
			Calopogon tuberosus	Grass-pink	CS	3
			Carex atlantica	Caric Sedge	-	6
			Carex emoryi	Caric Sedge	SH	6
			Carex joorii	Cypress-swamp Caric Sedge	CS	3
			Carex seorsa	Caric Sedge	CS	3
			Liparis loeselii	Loesel's Twayblade	CS	3
			Platanthera clavellata	Clubspur Orchid	K	7
			Platanthera cristata	Yellow-crested Orchid	CS	3
			Platanthera integrilabia	White Fringeless Orchid	C	2
			Pogonia ophioglossoides	Rose Pogonia	CS	3
			Rhynchospora globularis var. globularis	Globe Beaked-rush	CS	3
			Sphenopholis pensylvanica	Swamp Wedgscale	CS	3
			Trillium pusillum var. pusillum	Least Trillium	CS	3
			Xyris caroliniana	Yellow-eyed Grass	CS	3
			Xyris difformis var. difformis	Yellow-eyed Grass	CS	3
			Xyris torta	Yellow-eyed Grass	CS	3
		P-MOSS	Hygrohypnum closteri	Closter's Water Hypnum	CS	3
			Sphagnum bartlettianum	Bartlett's Sphagnum Moss	SH	3/6
			Sphagnum macrophyllum	Large-leaved sphagnum	-	3
			Sphagnum magellanicum	Magellan's Sphagnum Moss	SH	6
			Sphagnum palustre	Sphagnum Moss	K	6/7



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Terrestrial	AMPHIBIAN	Ambystoma jeffersonianum	Jefferson Salamander	-	6
		Ambystoma opacum	Marbled Salamander	-	6
		Aneides aeneus	Green Salamander	SH	6
		Desmognathus ochrophaeus	Mountain Dusky Salamander	CS	3
		Desmognathus welteri	Black Mountain Salamander	K	7
		Hemidactylum scutatum	Four-toed Salamander	-	6
		Plethodon wehrlei	Wehrle's Salamander	CS	3
		Rana clamitans	Green Frog	-	6
		Rana sylvestris	Wood Frog	K	7
	BIRD	Accipiter striatus	Sharp-shinned Hawk	CS	3
		Aimophila aestivalis	Bachman's Sparrow	S	2
		Aix sponsa	Wood Duck	G	6
		Ammodramus henslowii	Henslow's Sparrow	CS	3
		Ammodramus savannarum	Grasshopper sparrow	-	6
		Archilochus colubris	Ruby-throated hummingbird	-	6
		Caprimulgus carolinensis	Chuck-will's widow	-	6
		Caprimulgus vociferus	Whip-poor-will	-	6
		Chondestes grammacus	Lark sparrow	CS	3
		Circus cyaneus	Northern Harrier	-	6
		Cistothorus platensis	Sedge Wren	CS	3
		Colaptes auratus	Northern flicker	-	6
		Colinus virginianus	Northern Bobwhite	H	6
		Contopus virens	Eastern wood pewee	-	6
		Corvus corax	Common Raven	CS	3
		Dendroica caerulea	Cerulean Warbler	CS	3
		Dendroica caerulescens	Black-throated Blue	SH	6
		Dendroica discolor	Prairie warbler	SH	6
		Dendroica dominica	Yellow-throated Warbler	SH	6
		Dendroica fusca	Blackburnian warbler	CS	3
		Dendroica pensylvanica	Chestnut-sided warbler	SH	6
		Dendroica pinus	Pine warbler	SH	6
		Dryocopus pileatus	Pileated Woodpecker	SH	6
		Dumetella carolinensis	Gray catbird	-	6
		Empidonax minimus	Least flycatcher	CS	3
		Empidonax virescens	Acadian flycatcher	SH	6
		Falco peregrinus	Peregrine Falcon	CS	2/6
		Geothlypis trichas	Common yellowthroat	-	6
		Haliaeetus leucocephalus	Bald Eagle	T	1
		Helmitheros vermivorus	Worm-eating warbler	-	6
		Hylocichla mustelina	Wood Thrush	SH	6
		Icteria virens	Yellow-breasted Chat	SH	6
		Ixobrychus exilis	Least bittern	CS	3
		Lanius ludovicianus migrans	Migrant Loggerhead Shrike	S*	2
		Limnothlypis swainsonii	Swainson's Warbler	SH	6
		Lophodytes cucullatus	Hooded Merganser	-	3/6
		Melanerpes erythrocephalus	Red-headed woodpecker	-	6
		Mniotilta varia	Black-and-white Warbler	SH	6
		Oporornis formosus	Kentucky warbler	-	6
		Picoides borealis	Red-cockaded Woodpecker	E	1
		Pipilo erythrophthalmus	Eastern Towhee	SH	6
		Piranga rubra	Summer tanager	-	6
		Podilymbus podiceps	Pied-billed Grebe	-	3/6

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Terrestrial	BIRD	Protonotaria citrea	Prothonotary warbler	SH	6
		Scolopax minor	American Woodcock	G	5/6
		Seiurus aurocapillus	Ovenbird	SH	6
		Seiurus motacilla	Louisiana Waterthrush	SH	6
		Setophaga ruticilla	American redstart	-	6
		Sitta canadensis	Red-breasted Nuthatch	SH	6
		Spizella passerina	Chipping sparrow	-	6
		Spizella pusilla	Field sparrow	-	6
		Thryomanes bewickii altus	Bewick's Wren	CS	3
		Vermivora chrysoptera	Golden-winged warbler	CS	3
		Vireo flavifrons	Yellow-throated vireo	-	6
		Wilsonia canadensis	Canada warbler	SH	6
		Wilsonia citrina	Hooded Warbler	SH	6
	CRUSTACEAN		Amphipods (cave)	-	6
	FUNGI	Laetioporus sulphureus	Sulphur Shelf	H	6
		Morchellus esculentus	Morel	H	6
	GASTROPOD	Anguispira kochi	Banded Globe	CS	3
		Anguispira rugoderma	Pine Mountain Disc	CS	3
		Mesodon chilhoweensis	Queen Crater	CS	3
		Mesodon estillensis	Estill Mesodon	CS	3
		Mesodon wetherbyi	Clifty Covert	CS	3
		Mesomphix rugeli	Wrinkled Button	CS	3
		Paravitrea placentula	Glossy Supercoil	S	2
		Pupillidae	pupils	-	6
		Vertigo bollesiana	Delicate vertigo	CS	3
		Vertigo clappi	Cupped Vertigo	S	2
	INSECT	Dryobius sexnotatus	Sixbanded Longhorn Beetle	CS	3/6
		Lytrosis permagnaria	A Geometrid Moth	CS	3
		Ophiogomphus howei	Pygmy Snaketail	S	2
		Pseudanophthalmus exoticus	Exotic Cave Beetle	CS	3
		Pseudanophthalmus rogersae	Rogers' Cave Beetle	CS	3
		Pseudanophthalmus scholasticus	Schoolhouse Cave Beetle	CS	3
		Pyrgus wyandot	Appalachian Grizzled Skipper	S*	2
		Speyeria diana	Diana Fritillary	S	2
		Speyeria idalia	Regal Fritillary	-	2
	MAMMAL	Castor canadensis	Beaver	-	7
		Clethrionomys gapperi maurus	Kentucky Red-backed Vole	CS	3
		Corynorhinus (Plecotus) rafinesquii rafinesquii	Rafinesque's Big-eared Bat	CS	3
		Felis concolor cougar	Eastern Cougar	E	1
		Lutra (Lontra) canadensis	River Otter	-	6
		Myotis austroriparius	Southeastern myotis	CS	3
		Myotis grisescens	Gray Bat	E	1
		Myotis leibii	Eastern Small-footed Bat	S	2
		Myotis sodalis	Indiana Bat	E	1
		Neotoma magister	Allegheny Woodrat	CS	3
		Peromyscus maniculatus nubiterrae	Cloudland Deermouse	CS	3
		Plecotus townsendii virginianus	Virginia Big-eared Bat	E	1
		Sorex cinereus cinereus	Masked Shrew	CS	3
		Sorex dispar blitchi	Long-tailed Shrew	CS	3
		Spilogale putorius	Eastern Spotted Skunk	CS	3
		Sylvilagus obscurus	Appalachian Cottontail	CS	3

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Terrestrial	MAMMAL		Ursus americanus	Black Bear	-	5
	P-DICOT		Acer spicatum	Mountain Maple	CS	3
			Aconitum uncinatum (generic)	Monkshood	CS	3
			Aconitum uncinatum ssp. uncinatum	Blue Monkshood	CS	3
			Agalinus decemloba	Purple False Foxglove	CS	3
			Amelanchier stolonifera	Running Serviceberry	CS	3
			Arenaria cumberlandensis	Cumberland Sandwort	E	1
			Aster concolor	Eastern Silvery Aster	CS	3
			Aster saxicastellii	Rockcastle Aster	S	2
			Aureolaria patula	Spreading False Foxglove	S	2
			Baptisia australis var. australis	False Indigo	-	6
			Berberis canadensis	American barberry	CS	3
			Calycanthus floridus var. glaucus	Sweetshrub, Carolina Allspice	CS	3
			Castanea dentata	American Chestnut	CS	3
			Castanea dentata	Chinquapin (generic)	CS	3
			Castanea pumila var. pumila	Allegheny Chinquapin	CS	3
			Castilleja coccinea	Scarlet Indian Paintbrush	CS	3
			Ceanothus herbaceus	Prairie Redroot	CS	3
			Chrysogonum virginianum var. virginianum	Green-and-gold	CS	3
			Cimicifuga americana	Black Cohosh	-	5
			Cimicifuga racemosa	Black Cohosh	H	5
			Cimicifuga rubifolia	Appalachian Bugbane	S*	2
			Circaea alpina ssp. alpina	Small Enchanter's-nightshade	CS	3
			Clematis glaucophylla	White-leaf Leather-flower	CS	3
			Collinsonia verticillata	Stoneroot	CS	3
			Comptonia peregrina	Sweet-fern	CS	3
			Conradina verticillata	Cumberland Rosemary	T	1
			Dodecatheon frenchii	French's Shooting Star	S	2
			Epifagus virginiana	Beechdrops	SH	6
			Eryngium yuccifolium	Yucca-leaved Rattlesnake Master	CS	3
			Eupatorium luciae-brauniae	Lucy Braun's White Snakeroot	S	2
			Eupatorium semiserratum	Small-flowered Thoroughwort	CS	3
			Euphorbia mercurialina	Mercury Spurge	CS	3
			Gaylussacia brachycera	Box Huckleberry	S	2
			Gentiana alba	Yellow Gentian	CS	3
			Gratiola pilosa	Shaggy Hedge-hyssop	CS	3
			Helianthus atrorubens	Red-disked Sunflower	CS	3
			Helianthus eggertii	Eggert's Sunflower	PT	1
			Hexastylis contracta	Southern Heartleaf	S	2
			Hydrastis canadensis	Goldenseal	H	3
			Juglans cinerea	Butternut	CS	3
			Lathyrus palustris	Vetchling Peavine	CS	3
			Lathyrus venosus	Smooth Veiny Peavine	CS	3
			Lesquerella globosa	Lesquereux's Bladder-pod	C	2
			Lithospermum latifolium	American Gromwell	CS	3
			Lysimachia fraseri	Fraser's Loosestrife	S*	2
			Matelea carolinensis	Carolina Anglepod	CS	3
			Melampyrum lineare	Cow Wheat	CS	3
			Melampyrum lineare var. lineare	American Cow-wheat	CS	3
			Marshallia grandiflora	Barbara's Buttons	S	2
			Minuartia glabra	Appalachian Sandwort	CS	3
			Monotropsis odorata	Sweet Pinesap	S	2



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Terrestrial	P-DICOT		Oenothera linifolia	Thread-leaf Sundrops	CS	3
			Oenothera perennis	Small Sundrops	CS	3
			Oxalis monata	Mountain Wood Sorrel	SH	6
			Panax quinquefolius	Ginseng	H	5
			Parietaria floridana	Florida Pellitory	CS	3
			Paxistima canbyi	Mountain Lover	S	2
			Philadelphus inodorus	Mock Orange	CS	3
			Philadelphus pubescens var. pubescens	Hoary Mock Orange	CS	3
			Polygala cruciata var. cruciata	Cross-leaf Milkwort	CS	3
			Polygala pauciflora	Gaywings	CS	3
			Polygala polygama var. polygama	Racemed Milkwort	CS	3
			Prenanthes crepidinea	Nodding Rattlesnake-root	CS	3
			Ptelea trifoliata	Wafer Ash, Hop-tree	K	7
			Rhododendron cumberlandense	Cumberland Azalea	S	2
			Rhynchosia tomentosa	Hairy Snout Bean	CS	3
			Salvia urticifolia	Nettle-leaf Sage	CS	3
			Sambucus racemosa spp. pubens var. pubens	Red Elderberry	CS	3
			Sanicula canadensis	Sanicle	H	5
			Schisandra glabra	Bay Starvine	CS	3
			Schwalbea americana	American Chaffseed	E	1
			Scutellaria saxatilis	Rock Scullcap	CS	3
			Senecio pauperulus	Short-stem Ragwort	CS	3
			Shortia galacifolia var. galacifolia	Southern Oconee bells	CS	3
			Silene ovata	Ovate Catchfly	S	2
			Silene regia	Royal Catchfly	S	2
			Silphium wasiotense	Wasioto Rosinweed	S	2
			Solidago albopilosa	White-haired Goldenrod	T	1
			Solidago harrissii	Harris's Goldenrod	CS	3
			Solidago spathulata	Riverbar Goldenrod	CS	3
			Spiraea virginiana	Virginia Spiraea	T	1
			Styrax grandiflorus	Big-flowered Snowbell	CS	3
			Symphoricarpos albus var. albus	Snowberry	CS	3
			Synandra hispidula	Synandra	CS	3
			Talinum teretifolium	Roundleaf Fameflower	CS	3
			Tephrosia spicata	Spiked Hoary-pea	CS	3
			Thalictrum mirabile	Little Mountain Meadow Rue	S	2
			Thaspium pinnatifidum	Cutleaf Meadow-parsnip	CS	3
			Thermopsis mollis (generic)	Velvet Bush Pea	S	2
			Thermopsis mollis var. mollis	Velvet Bushpea	CS	3
			Tragia urticifolia	Nettle-leaf Noseburn	CS	3
			Trichostema setaceum	Narrow-leaved Bluecurls	CS	3
			Trientalis borealis	Northern Mayflower	CS	3
			Trifolium stoloniferum	Running Buffalo Clover	E	1
			Ulmus rubra	Slippery Elm	H	5
			Viola pedata	Bird's-foot Violet	K	7
			Vitis rupestris	Sand Grape	S	2
			Zanthoxylum americana	Toothache-tree	K	7
P-FERN			Asplenium ruta-muraria	Wall rue Spleenwort	SH	6
			Isoetes englemannii	Quillwort	SH	6
			Trichomanes boschianum	Filmy Fern	CS	3
			Vittaria appalachiana	Appalachian Gametophyte Fern	SH	6

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<i>Habitat</i>				<i>DBNF</i>	<i>Selection</i>
<i>Group</i>	<i>Class</i>	<i>Species</i>	<i>Common_Name</i>	<i>Status</i>	<i>Criterion</i>
Terrestrial	P-GYMNOSPERM	Juniperus virginiana	Eastern Redcedar	SH	6
		Juniperus communis var. depressa	Ground Juniper	CS	3
		Pinus rigida	Pitch Pine	CS	3
		Taxus canadensis	Canada Yew	CS	3
		Thuja occidentalis	Northern White Cedar	CS	3
	P-LICHEN	Cladina spp (cf. rangiferina, stellaris, subtenuis )	Reindeer Lichen	SH	6
	P-LIVERWORT	Nowellia curvifolia	Liverwort	SH	6
		Plagiochila austinii	Austin's Leafy Liverwort	S	2
		Plagiochila sullivanii	Sullivan's Leafy Liverwort	S	2
	P-MONOCOT	Trichocolea tomentella	Liverwort	SH	6
		Agave virginica	Wild Agave	SH	6
		Arundinaria gigantea	Cane	SH	5
		Calamagrostis porteri ssp. insperata	Ofer Hollow Reed Grass	S	2
		Carex juniperinum	Juniper Sedge	CS	3
		Carex picta	Boott's Caric Sedge	CS	3
		Carex purpurifera	Doughnut Caric Sedge	CS	3
		Carex stricta	Uptight Caric Sedge	CS	3
		Cleistes bifaria	Appalachian Spreading Pogonia	CS	3
		Corallorhiza maculata	Spotted Coralroot	CS	3
		Cypripedium acaule	Pink Lady-slipper	H	5
		Cypripedium kentuckiense	Kentucky Lady's Slipper	S	2
		Cypripedium parviflorum var. parviflorum	Small Yellow Layd's-slipper	CS	3
		Dioscorea villosa	Wild Yam	-	5
		Elymus svensonii	Svenson's Wild Rye	S	2
		Gymnopogon ambiguus	Bearded Skeleton Grass	CS	3
		Lilium philadelphicum var. philidelphicum	Wood Lily	CS	3
		Maianthemum canadense	Wild Lily-of-the-Valley	CS	3
		Melanthium parviflorum	Small-flowered False Hellebore	CS	3
		Muhlenbergia cuspidata	Plains Muhlygrass	CS	3
		Platanthera psycodes	Small Purple-fringed Orchid	CS	3
		Scleria ciliata var. ciliata	Fringed Nut-rush	CS	3
		Spiranthes lucida	Shining Ladies'-tresses	CS	3
		Spiranthes magnicamporum	Great Plains Ladies'-tresses	CS	3
		Sporobolus clandestinus	Rough Dropseed	CS	3
	P-MOSS	Brothera leana	Moss	SH	6
		Bryoxiphium norvegicum	Sword Moss	S	2
		Buxbaumia aphylla	Bug-on-a-Stick	S*	2
		Dicranum scoparium	Dog Paw Moss, Elegant Moss	H	5
		Hypnum curvifolium	Feather Moss, Log Moss	H	5
		Hypnum imponens	Feather Moss, Log Moss	H	5
		Mnium hornum	Streamside Mnium	-	6
		Polytrichum juniperinum	Juniper Hair Cap moss	-	6
		Scopelophila cataractae	Cataract Metal Moss	CS	3
		Syrrhopodon texanus	Moss	SH	6
		Thuidium delicatulum	Fern Moss, Log Moss	H	5
		Tortula norvegica	Tortula	SH	6

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<i>Habitat</i>	<i>Group</i>	<i>Class</i>	<i>Species</i>	<i>Common_Name</i>	<i>DBNF Status</i>	<i>Selection Criterion</i>
Terrestrial	REPTILE		Cemphora coccinea copei	Northern Scarlet Snake	CS	3
			Crotalus horridus	Timber Rattlesnake	SH	6
			Elaphe gutta gutta	Corn Snake	CS	3
			Eumeces antracinus anthracinus	Northern Coal Skink	CS	3
			Eumeces inexpectatus	Southern Five-lined Skink	CS	3
			Lampropeltis triangulum elapsoides	Scarlet Kingsnake	CS	3
			Ophisaurus attenuatus longicaudus	Eastern Slender Glass Lizard	CS	3
			Pituophis melanoleucus melanoleucus	Northern Pine Snake	CS	3
			Tantilla coronata	Southeastern Crowned Snake	CS	3
			Thamnophis sauritus sauritus	Eastern Ribbon Snake	CS	3
			Virginia valeriae valeriae	Eastern Earth Snake	CS	3

**Selection Criteria:** 1=federal T or E, 2=sensitive species, 3=conservation species, 5=high public interest, 6=demanding/special habitat requirements, 7=keystone species, essential to support potential species at risk.

**DBNF Status:** E=federal endangered, T=federal threatened, P=federal proposed, C=federal candidate species, S=sensitive species, S\*=sensitive species, undocumented, SH=special habitat requirements, CS=conservation species (locally rare), G=Game, H=harvested, K=keystone species, essential to support potential species at risk .

#### Short List Summary

<u>Sp. Group</u>	<u>Aquatic</u>	<u>Spring &amp; Wetland</u>	<u>Terrestrial</u>	<u>Total Terrestrial</u>	<u>Total Shortlist</u>
AMPHIBIANS	2		9	9	11
REPTILES			11	11	11
BIRDS			56	56	56
MAMMALS			17	17	17
CRUSTACEANS	7	1	1	2	9
GASTROPODS	4		10	10	14
INSECTS	1	1	9	10	11
FISH	57				57
MUSSELS	36				36
P-DICOTS	2	9	98	107	109
P-FERNS		1	4	5	5
P-FUNGI			2	2	2
P-GYMNOSPERMS			5	5	5
P-LICHES			1	1	1
P-LIVERWORTS	1	1	4	5	6
P-MONOCOTS	3	17	24	41	44
P-MOSSES		5	12	17	17
	<b>113</b>			<b>298</b>	<b>411</b>



## Appendix D

### List of Other Species Mentioned

## List of Other Species Mentioned

Arranged alphabetically by Common Name used in the report.

Alder, *Alnus rugosa*  
Alum Root, Small-flowered, *Heuchera parviflora*  
Alum Root, *Heuchera villosa*  
American Beech, *Fagus grandifolia*,  
American Chestnut, *Castanea dentata*,  
American Feverfew, *Parthenium integrifolium*  
American Hazelnut, *Corylus americana*  
American Holly, *Ilex opaca*  
Angelica, *Angelica venenosa*  
Aster, *Aster* spp., any number of species many be included here  
Autumn olive, *Elaeagnus angustifolia*  
Basswood, *Tilia americana*  
Bergamot, *Monarda clinopodia*  
Big Bluestem, *Andropogon gerardii*  
Black Cherry, *Prunus serotina*  
Black Cohosh, *Cimicifuga racemosa*, rarely may refer to *C. americana*  
Black Haw, *Viburnum prunifolium*  
Black Locust, *Robinia pseudoacacia*  
Black Oak, *Quercus velutina*  
Black Walnut, *Juglans nigra*  
Black Willow, *Salix nigra*  
Blackberry, *Rubus allegheniensis*, *R. argutus*  
Blackgum (Upland), *Nyssa sylvatica* var. *sylvatica*  
Blackjack Oak, *Quercus marilandica*  
Blue Ash, *Fraxinus quadrangulata*  
Blueberry, *Vaccinium pallidum*, *V. corymbosum*, *V. stamineum*  
Boxelder, *Acer negundo*  
Bulrushes, *Scirpus* spp., cf. *atrovirens*, *polyphyllus*  
Butterfly Pea, *Clitoria mariana*  
Butternut, *Juglans cinerea*  
Callico Aster, *Aster lateriflorus*  
Canada Lily, *Lilium canadense*  
Caric Sedges, *Carex* spp., cf. *lurida*, *vulpina*, *scoparia*,  
Carolina Buckthorn, *Rhamnus caroliniana*  
Carolina Rose, *Rosa carolina*  
Carolina Willow, *Salix carolina*  
Cattail, *Typha latifolia*, possibly *T. angustifolia*  
Chestnut Oak, *Quercus montana*  
Chickweed, *Stellaria media*  
Chicory, *Chicorum intybus*  
Chinquapin (Yellow) Oak, *Quercus muhlenbergii*  
Chokeberry, *Aronia melanocarpa*, *A. arbutifolia*

Christmas fern, *Polystichum acrostichoides*  
 Cinnamon fern, *Osmunda cinnamomea*  
 Cinquefoils, *Potentilla simplex*, drier sites; *P. canadensis*, moister sites  
 Clearweed, *Pilea pumila*  
 Cliff Meadow Rue, *Thalictrum clavatum*  
 Climbing Fern, *Lygodium palmatum*  
 Columbine, *Aquilegia canadensis*  
 Common Cinquefoil, *Potentilla simplex*  
 Common Milkweed, *Asclepias syriaca*  
 Cornel-leaf Aster, Whitetop Aster, *Aster infirmus*  
 Crabgrass, *Digitaria ischaemum*, *D. sanguinaria*  
 Crested Dwarf Iris, *Iris cristata*,  
 Crown Vetch, *Coronilla varia*  
 Cucumber Magnolia, *Magnolia acuminata*  
 Curly Dock, *Rumex crispus*  
 Deertongue, *Panicum commutatum*  
 Dittany, *Cunila origanoides*  
 Dog Violet, *Viola conspersa*  
 Dogbane, *Apocynum cannabinum*  
 Downy Juneberry, *Amelanchier arborea*  
 Downy Woodmint, *Blephilia ciliata*  
 Dwarf Cinquefoil, *Potentilla* cf. *simplex*  
 Eastern Hemlock, *Tsuga canadensis*,  
 Eastern Redcedar, *Juniperus virginiana*  
 Eastern White Pine, *Pinus strobes*  
 Ebony Spleenwort, *Asplenium platyneuron*  
 Elm-leaved Goldenrod, *Solidago ulmifolia*  
 Erect Trillium, *Trillium erectum*  
 Fire Pink, *Silene virginica*  
 Foamflower, *Tiarella cordifolia*  
 Fox Grape, *Vitis labrusca*  
 False Foxglove, *Aureolaria virginica*, *A. laevigata*  
 Gayfeathers, *Liatris* spp., cf. *squarrosa*, *spicata*  
 Glaucus Sunflower, *Helianthus strumosus*  
 Goat's Beard, *Aruncus dioicus*  
 Golden Alexanders, *Zizia aptera*  
 Golden Ragwort, *Senecio aureus*  
 Goldenrod, *Solidago arguta*  
 Goldenrods, *Solidago* spp., cf. *nemoralis*, *hispida*, *altissima*, *erecta*  
 Grape Fern, *Botrychium biternatum*, *B. dissectum*  
 Greenbrier, *Smilax rotundifolia*  
 Ground Cherries, *Physalis* spp. cf., *virginiana*, *heterophylla*  
 Ground Pine, *Lycopodium obscurum*  
 Hackberry, *Celtis occidentalis*  
 Dwarf Hackberry, *Celtis tenuifolia*  
 Halberd-leaved Yellow Violet, *Viola hastata*



Hairy Scullcap, *Scutellaria elliptica*  
 Hepatica, *Hepatica acutiloba*, *H. americana*  
 Hercules'-club, *Aralia spinosa*  
 Hierba de Yago, *Eclipta prostrata*  
 Hog Peanut, *Amphicarpa bracteata* var. *bracteata*  
 Hornbeam, Hop Hornbeam, *Ostrya virginiana*  
 Horsetweed, *Conyza canadensis*  
 Houstonia, *Houstonia canadensis*  
 Huckleberry, *Gaylussacia baccata*  
 Indiangrass, *Sorghastrum nutans*  
 Interior willow, *Salix exigua*  
 Interrupted Fern, *Osmunda claytoniana*  
 Ironweed, *Vernonia gigantea*  
 Ironwood (Bluebeech, Muscledwood), *Carpinus caroliniana*  
 Japanese Honeysuckle, *Lonicera japonicum*  
 Japanese Knotweed, *Polygonum cuspidatum*  
 Jewelweed, *Impatiens capensis*  
 Joe Pye-weed, *Eupatorium fistulosum*  
 Johnsongrass, *Sorghum halepense*  
 Kentucky Bluegrass, *Poa pratensis*  
 Kudzu, *Pueraria montana (lobata)*  
 Lance-leaved Loosestrife, *Lysimachia lanceolata*  
 Large-Flowered Trillium, *Trillium grandiflorum*  
 Large Leaf Aster, *Aster macrophyllus*  
 Large Leaf Magnolia, *Magnolia macrophylla*  
 Little Bluestem, *Schizachyrum scoparium*  
 Liverworts (stream banks), *Conocephalum conicum*, *Pellia* spp.  
 Long-spurred Violet, *Viola rostrata*  
 Lowbush Blueberry, *Vaccinium pallidum*  
 Lowland Buttonweed, *Diodia virginiana*  
 Maidenhair Fern, *Adiantum pedatum*  
 Mapleleaf Viburnum, *Viburnum acerifolium*  
 Maples, *Acer* spp., cf. *rubrum*, *saccharum*  
 Marginal Woodfern, *Dryopteris marginalis*  
 Marsh or Swamp Sticktight, *Bidens laevis*  
 Maryland Golden Aster, *Chrysopsis mariana*  
 May Apple, *Podophyllum peltatum*  
 Meehanian, *Meehanian cordata*  
 Mimosa, *Albizia julibrissin*  
 Mist-flower, *Eupatorium incarnatum*  
 Mockernut Hickory, *Carya tomentosa*,  
 Moss (stream banks), *Atrichum crispum*, *A. undulatum*  
 Mountain Holly, *Ilex verticillata*  
 Mountain Laurel, *Kalmia latifolia*  
 Mountain Pepperbush, *Clethra acuminata*  
 Mountain Spleenwort, *Asplenium montanum*

Multiflora Rose, *Rosa multiflora*  
 Naked-flowered Tick Trefoil, *Desmodium nudiflorum*  
 Native Flax, *Linum sulcatum*, *L. striatum*  
 Nepal Browntop, *Microstegium vimineum*  
 Nettle-leaf Verbena, *Verbena urticifolia*  
 New York Fern, *Thelypteris novaboracensis*  
 Northern Red Oak, *Quercus rubra*  
 Ohio Buckeye, *Aesculus glabra*  
 Oxeye daisy, *Chrysanthemum leucanthemum*  
 Pale Jewelweed, *Impatiens pallida*  
 Panic grasses, *Panicum* spp., *Dichanthelium* spp.  
 Partridgeberry, *Mitchella repens*  
 Pawpaw, *Asimina triloba*  
 Persimmon, *Diospyros virginiana*  
 Phragmites, *Phragmites australis*  
 Pignut Hickory, *Carya glabra*,  
 Pink Lady's Slipper, *Cypripedium acaule*  
 Poison Ivy, *Toxicodendron (Rhus) radicans*  
 Post Oak, *Quercus stellata*  
 Potato Vine, *Dioscorea batatas*  
 Prairie Petunia, *Ruellia caroliniana*, possibly *R. streptens*  
 Purple Cliffbrake, *Pellaea atropurpurea*  
 Purpletop, *Tridens flavus* var. *purpureus*  
 Ragweeds, *Ambrosia trifida*, *A. artemisiifolia*  
 Rattlesnake Plantain, *Goodyera pubescens*  
 Red Maple, *Acer rubrum*  
 Redbud, *Cercis canadensis*  
 Redtop Panic Grass, *Panicum rigidulum*  
 Redtop, *Agrostis alba*  
 Rhododendron, *Rhododendron maximum*, possibly *R. catawbiense*  
 River Birch, *Betula nigra*  
 River Grape, *Vitis riparia*  
 Rock Goldenrod, *Solidago sphacelata*  
 Round Leaf Tick Trefoil, *Desmodium rotundifolium*  
 Round-leaved Catchfly, *Silene rotundifolia*  
 Round-leaved Ragwort, *Senecio obovatus*  
 Royal Fern, *Osmunda regalis*  
 Rue Anemone, *Anemonella thalictroides*  
 Rushes, *Juncus* spp. cf. *effusus*, *tenuis*, *acuminatus*  
 Rusty Blackhaw, *Viburnum rufidulum*  
 Rusty Bulrush, *Scirpus cyperinus*  
 Sassafras, *Sassafras albidum*  
 Scarlet Oak, *Quercus coccinea*  
 Sedges, *Carex cephalophora*, *C. artitecta*, and *C. digitalis*  
 Serviceberry, Downy Juneberry, *Amelanchier arborea*  
 Sericea lespedeza, *Lespedeza cuneata*

Short Joe Pye-weed, *Eupatorium purpureum*  
 Short's Aster, *Aster shortii*  
 Shortleaf Pine, *Pinus echinata*  
 Shrub Dogwood, *Cornus*  
 Shrub Honeysuckle, *Lonicera maackii*, *L. tatarica*  
 Shrubby St. John's wort, *Hypericum frondosum*  
 Shumard Oak, *Quercus shumardii*  
 Side-oats Grama, *Bouteloua curtipendula*  
 Silver Maple, *Acer saccharinum*  
 Silvery Gladefern, *Athyrium thelypteroides*  
 Slender Toothwort, *Dentaria heterophylla*  
 Slippery Elm, *Ulmus rubra*  
 Small-head Sunflower, *Helianthus microcephalus*  
 Small-flowered Agrimony, *Agrimonia parviflora*  
 Small-flowered Panic Grass, *Panicum microcarpon*, *P. dichotomum*  
 Smartweed, *Polygonum* spp. cf. *pensylvanicum*, *hydropiperoides*, *hydropiper*, *punctatum*  
 Smooth Aster, *Aster laevis* var. *laevis*  
 Smooth Rockcress, *Arabis laevigata*  
 Smooth Sumac, *Rhus glabra*  
 Sourwood, *Oxydendron arboreum*,  
 Southern Red Oak, *Quercus falcata*,  
 Spicebush, *Lindera benzoin*  
 Spikemoss, *Selaginella apoda*  
 Spotted Spurge, *Euphorbia* (*Chamaesyce*) *nutans*  
 Spotted Wintergreen, *Chimophila maculata*  
 Spreading Panic Grass, *Dicanthelium* (*Panicum*) *dichotomum*  
 Spring Beauty, *Claytonia caroliniana*, *C. virginiana*  
 Star or Starry Chickweed, *Stellaria pubera*  
 Steeplejack, *Spiraea alba*  
 Stoloniferous Redtop, *Agrostis stolonifera*  
 Stonecrop, *Sedum ternatum*  
 Strawberry Bush (Common Wahoo), *Euonymus americanus*  
 Streamside Aster, *Aster prenathoides*  
 Sugar Maple, *Acer saccharum*  
 Summer Grape, *Vitis aestivalis*  
 Sundrops, *Oenothera biennis*  
 Sunflowers, *Helianthus* spp., cf. *microcephalus*, *hirsutus*, *divaricatus*  
 Swamp Furrow Moss, *Aulacomnium palustre*  
 Swamp Goldenrod, *Solidago rugosa*  
 Swamp Sticktight, *Bidens laevis*  
 Sweet Anise, *Osmorhiza claytoni*, also *O. longistylis*  
 Sweet Buckeye, *Aesculus octandra*  
 Sweet Clovers, *Melilotus albus*, *M. officinalis*  
 Sweet Goldenrod, *Solidago odorata*  
 Sweet Vernal Grass, *Anthoxanthum odoratum*  
 Sweetgum, *Liquidambar styraciflua*

Switchgrass, *Panicum virgatum*  
 Sycamore, *Platanus occidentalis*  
 Tall Anemone, *Anemone virginiana*  
 Tall Fescue, *Lolium (Festuca) arundinaceum*  
 Tear Thumb, *Polygonum arifolium*  
 Thin-leaved Sunflower, *Helianthus decapetalus*  
 Three-lobed Violet, *Viola triloba*  
 Tickseeds, (Sticktight), *Bidens* spp., cf. *polylepis*, *aristata*  
 Tree-of-heaven, *Ailanthus altissima*  
 Upland buttonweed, *Diodia teres*  
 Velvet Grass, *Holcus lanatum*  
 Virginia Creeper, *Parthenocissus quinquefolia*  
 Virginia Pine, *Pinus virginiana*  
 Virginia Wild Ryegrass, *Elymus virginiana*  
 Wall rue, *Asplenium ruta-muraria*  
 Wavy Leaf Aster, *Aster undulatus*  
 Wedgegrass, *Sphenopholis obtusa*  
 White Ash, *Fraxinus americana*  
 White Baneberry, *Actaea pachypoda*  
 White Basswood, *Tilia heterophylla*  
 White Oak, *Quercus alba*  
 White Pepperbush, *Itea virginiana*  
 White Pine, *Pinus strobus*  
 White Snakeroot, *Eupatorium rugosum*  
 White Wood Aster, *Aster divaricatus*  
 Whitetop Aster, *Aster (Doellengeria) umbellatus*, *A. sericocarpoides* (wetland), *A. (D.infirma) infirmus* (upland)  
 Whorled Loosestrife, *Lysimachia quadrifolia*  
 Wild Carrot, *Daucus carota*  
 Wild Geranium, *Geranium maculatum*  
 Wild Ginger, *Asarum canadense*  
 Wild Hydrangea, *Hydrangea arborescens*  
 Wild Ramie (Wild Jute), *Boehmeria cylindrica*  
 Winged Sumac, *Rhus copallina*  
 Wingstem, *Verbesina alternifolia*, possibly *V. virginiana*  
 Witch Hazel, *Hamamelis virginiana*  
 Wood Vetch, *Vicia caroliniana*  
 Woolly Blue Violet, *Viola sororia*  
 Wreath Goldenrod, *Solidago caesia*  
 Yellow Birch, *Betula alleghaniensis*,  
 Yellow Buckeye, *Aesculu flava*  
 Yellow Lady's Slipper, *Cypripedium pubescens*  
 Yellow Mandarin, *Disporum lanuginosum*  
 Yellow Poplar (Tulip poplar), *Liriodendron tulipifera*,  
 Yellow Trout Lily (Dog-tooth Violet, Fawn Lily), *Erythronium americanum*  
 Yellowroot, *Xanthorhiza simplicissima*

## Appendix E

## Glossary



## Glossary

**Abutment:** Foundation at the edge of a stream crossing which supports the ends of a ridge.

**Acidic substrate:** A layer of surface material that has a pH less, generally having little or no base saturation.

**Age classes:** Intervals (commonly 10 years) into which the age range of forest is divided; also the trees falling into such an interval.

**Alluvial:** Relating to and/or sand or silt deposited by flowing water.

**Alluvial fan:** A mass of sediment deposited at some point along a stream course at which there is a sharp decrease in gradient, e.g. between a mountain range and a plain. Essentially, a fan is the terrestrial equivalent to a river-delta formation

**Animal community:** The species of animals supported by a habitat association.

**Arch pipe:** A culvert section, usually formed of bolted plates, that is an arc of a circle (usually one-half or less); a bottomless culvert.

**Aspect:** The direction a slope face with respect to the cardinal (north, east, south, west) compass points. SE to NW aspect ranges from an azimuth of 136 degrees southeast to 316 degrees northwest. NW to SE aspect ranges from an azimuth of 316 degrees northwest to 136 degrees southeast.

**Basic substrate:** A layer of surface material that has a pH greater than 7.0, generally having moderate to high base saturation.

**Best Management Practices (BMP's):** Methods, measures, or practices that prevent or reduce water pollution; including but not limited to, structural and nonstructural controls, operation and maintenance procedures and other requirements, and scheduling and distribution of activities. Usually BMP's are applied as a system of practices rather than a single practice.

**Biological Agent:** Any predator, pathogen, or parasite that can be used to maintain another, organism's population density at a lower average level than would occur in its absence.

**Blowdown:** Trees felled by high winds.

**Bog:** An open area characterized by non-woody vegetation and soil saturated by somewhat stagnant water.

**Broad-Based Dip:** Surface runoff diversions built into the bed of a forest road; consisting of a long approach section, a low, out-sloped middle section, and a short terminal section with a reverse grade.

**Brush Barrier:** A linear pile of tree limbs, tops, logs, and other forest debris which is arranged along the lower edge of a road, landing, or site-prepared area to slow, diffuse, or intercept sediment moving off a disturbed site. Sediment trapping efficiency can be increased by placing solid material in contact with the ground surface.

**Buffer:** An area of land established between two separate and distinct land use regimes, which serves to modify the effects of one land use on the other.

**Canopy:** The more or less continuous cover of branches and foliage formed collectively by the crowns of adjacent trees. Layers of canopy may be called stories.

**Channel:** A water-bearing trough eroded vertically into low areas of the land surface. Also, a ditch or canal excavated for the flow of water.

**Climax:** The culminating stage in plant succession for a given site where the vegetation has reached a highly stable condition and is self-perpetuating or maintained by the physical habitat and natural events.

**Closed forest canopy:** A forest canopy in which the leaves of the canopy trees (e.g. tallest trees) are so dense that they completely shade the understory layers.

**Codominant:** Trees with crowns forming the general level of the crown cover and receiving full sunlight from above, but comparatively little from the sides; usually with medium-sized crowns more or less crowded on the sides.

**Cold air drainage:** A physical situation in which cooler air sinks below warmer ambient air into and following low land features such as streams or tight hollows. This creates areas of cooler than expected temperatures. It is often associated with caves and other karst features.

**Cold Water:** Streams having summer temperatures of 50 to 70 degrees and winter temperatures less than 58 degrees.

**Conifer:** The most important order of the Gynosperrmae, comprising a wide range of trees, mostly evergreens that bear cones and have needle-shaped or scalelike leaves.

**Cool Temperatures:** Air temperatures below those predominant in the area. Generally associated with higher elevations or cold air drainage.

**Cool Water:** Streams with water temperatures that fluctuate seasonally, intermediate to warm and cold water. Bank shade, overhead vegetative cover, or the interstitial boundary between mixing cold and warm water greatly controls these fluctuations.

**Coarse Woody Debris (CWD):** Pieces of wood (branches, whole trees, root wads) that are at least 10 cm (4 inches) in diameter and 1 meter (3 feet) long.

**Colluvial:** Weathered rock debris that has moved down a hillslope either by creep or by wash.

**Cover:** Vegetation used by wildlife for protection from predators, or to ameliorate weather conditions.

**Cross Drain:** Culverts that convey ditch water from one side of a road to the other.

**Culvert:** A metal, plastic, or concrete pipe installed to allow surface water to flow under roads or trails.

**Decadent:** Deteriorating, or indicating loss of vigor, often accompanied by disease.

**Deciduous:** Pertaining to perennial plants and trees that are leafless for some time of the year.

**Dense shrub understory:** A thick layer of woody perennial plants that comprises the lower level of the forest.

**Detritus:** Leaf litter, twigs, and other dead organic mater that enters the water.

**Diameter at breast height (dbh):** The standard method for measuring tree diameter at 4 ½ feet from the ground.

**Dissolved oxygen:** The amount of atmospheric oxygen that has been absorbed by water. The amount of dissolved oxygen available affects habitat quality for fish and other aquatic organisms.

**Diversity:** The relative degree of abundance of wildlife species, plant species, communities, habitats, or habitat features per unit of area.

**Dominant:** Plant species or species groups which, by means of their numbers, coverage, or size, have considerable influence upon or control the existence of associated species.

**Downed logs:** Trees that have fallen on or near the forest floor. The log could have fallen by any process, mechanical or natural and may be in various stages of decomposition.

**Drainage, good:** Effective removal of excess surface water or groundwater from land by surface or subsurface drains.

**Drainage, poor:** Lack of effective means to remove excess surface water or groundwater from land by surface or subsurface drains.

**Dry:** A condition characterized by the lack or absence of water

**Duff:** The organic layer of the forest floor which may contain leaf litter, fine roots, and decomposing organic mater. This is located above mineral soil.

**Ecosystem:** An interacting natural system including all the component organisms together with the abiotic environment and occupying an arbitrarily defined volume.

**Edge:** The place where different plant communities meet or where distinct successional stages or vegetative conditions within plant communities come together, i.e. woodland and grassland.

**Effectiveness monitoring:** The means by which managers determine if implemented plans and prescriptions achieve project objectives or other design criteria.

**Endangered species:** A species officially designated by the U.S. Fish and Wildlife Service as having its continued existence threatened over its entire range because its habitat is threatened with destruction, drastic modification, or severe curtailment, or because of overexploitation, disease, predation, or other factors.

**Ephemeral stream:** A watercourse that may or may not have a well-defined channel, and which flows only for short periods during and following precipitation. Ephemeral stream bottoms are usually above the water table and do not contain fish or aquatic insects with larvae that have multi-year life cycles.

**Ericaceous:** Shrub species that belong to the family Ericaceae. Examples of Ericaceae family members are mountain laurel, rhododendron, azalea, blueberry, and huckleberry.

**Erosion:** The process of detachment, transport, and deposition of soil material.

**Even-aged management:** A system of forest management in which states are produced or maintained with relatively minor differences in age.

**Exfoliating bark:** The outer layers of a tree, either alive or dead, that have peeled away from the trunk or limbs. The bark may remain connected to the tree on one or more sides providing habitat for some wildlife species.

**Exotic species:** A species that is not native to a region.

**Fanshape:** A low, outspread, relatively flat to gently sloping mass of loose rock material, shaped like an open fan, deposited by a stream at the place where it issues from a narrow mountain valley upon a plain or broad valley, or where a tributary stream is near or at its junction with the main stream, or wherever a constriction in a valley abruptly ceases or the gradient of the stream suddenly decreases; it is steepest near the mouth of the valley where its apex points upstream, and it slopes gently and convexly outward with gradually decreasing gradient.

**Filter Strip:** Area of land that infiltrates surface runoff and traps sediment and associated pollutants.

**Fire dependent:** Fire is required during development or life cycle for the health or persistence of the species or community.

**Fire enhanced:** The presence of fire in the environment will improve habitat conditions or the health and development of a species or community.

**Fire intensity:** The rate of heat release per unit of time per unit length of fire front. Numerically, it is the product of the heat yield, the quantity of fuel consumed in the fire front, and the rate of fire spread.

**Fire line:** A barrier to fire constructed with hand tools or equipment such as bulldozers or fire plows that remove burnable material from linear section of ground.

**Fire severity:** A measure of the amount of organic material consumed from the soil surface and the degree to which soil is exposed and its mineral composition altered.

**Fire tolerant:** A species that will persist when fire is a part of its environment.

**Floodplain:** Land areas adjacent to streams that are subject to period flooding and are typically level.

**Forb:** A grassy community characterized by nonwoody vascular plants including herbaceous, broad-leafed grasses, and grass-like (graminoid) species such as rushes and sedges.

**Forest:** An area of trees with overlapping crowns.

**Gabion:** Wire baskets filled with stone and placed to armor streambanks or cut banks against erosion.

**Girdling:** Making more or less continuous incisions around a tree that cut through the bark and cambium with the intention of killing the tree.

**Glide:** A gently flowing, calm reach of shallow water in a stream.

**Gradient:** The rise or fall of a ground surface or streambed expressed in degrees of slope.

**Groundwater:** Water below the surface of the earth that supplies wells and springs and may enter streams.

**Habitat:** The physical and biological environment for a plant or animal in which all the essentials for its development, existence, and reproduction are present.

**Habitat component:** A simple part of an area or environment in which an organism or population normally lives or occurs.

**Headwall:** A wall built around the inlet opening of a culvert.

**Heart rot:** Any rot in a tree confined to the heartwood, associated with fungi and generally originating in a living tree.



**Herbaceous:** Relating to plants having little or no woody tissue.

**Herbicide:** A chemical substance used for killing plants.

**High / Constant Humidity (Microclimate):** A microclimate in which relative humidity is maintained above 75% and/or varies little daily or seasonally.

**High shade:** A condition characterized by the presence of a barrier to direct sunlight, preventing high levels of light from reaching a species. Barriers may include closed upper canopy, dense shrub layers, rock formations, and physical settings such as steep, narrow valleys.

**HUC:** Hydrologic Unit Code- each hydrologic unit is identified by a HUC consisting of two eight digits based on the four levels of classification in the hydrologic unit system. The U.S. is divided and subdivided into successively smaller hydrologic units which are classified into four levels: regions, sub-regions, accounting units, and cataloging units.

**Hummock:** A raised area of dry ground within a swamp.

**Hydrology:** The science dealing with the properties, distribution, and circulation of water.

**Implementation monitoring:** The means by which managers determine if plans and prescriptions are implemented as designed.

**Indigenous:** A species naturally occurring in a particular region or environment

**Infiltration:** Movement of surface water into the soil.

**Intermittent stream:** A watercourse that flows in response to a seasonally fluctuating water table in a well-defined channel. Intermittent streams do not maintain fish or aquatic insects with larvae that have multi-year life cycles.

**Interspersed / Interspersion:** The intermixing of plant species and plant communities that provides increased diversity of habitat for animals.

**Juxtaposed / Juxtaposition:** To situate side by side; to place together.

**Keystone species:** Animals which, by virtue of their presence, alter the structure of a community creating habitat or conditions on which other species depend.

**Land Type Association (LTA):** LTAs are the fourth level of the Ecological Classification System in which designated boundaries are placed around a land area containing similar hydrological, geological, and ecological features. LTAs were developed for all lands within the Daniel Boone National Forest proclamation boundary in compliance with the **National Hierarchical Framework of Ecological Units** and for use during landscape level analysis and planning.

**Landform:** A feature of the earth's surface with distinctive form characteristics which can be attributed to the dominance of particular processes or structures in the course of its development and to which the feature can be clearly related.

**Landing/Deck:** Areas that are cleared for holding, storing, handling, and loading logs.

**Large Decadent Trees:** Trees near the end of their lives, with decay (usually represented by fungal diseases such as heartrot) and death proceeding at a rate faster than the production of new tissue. Specifically trees 20-24 inches dbh or larger.

**Large Woody Debris:** See coarse woody debris.

**Leaf litter:** The surface layer of the forest floor consisting of leaves that are not in an advanced stage of decomposition.

**Leave strip / area:** Stands of trees left standing between areas where trees have been removed.

**Limiting factor:** A single environmental factor or habitat component which by its presence or absence is the determining factor for the presence of a species.

**Litter:** The uppermost layer of organic debris on a forest floor. It may be composed of leaves, bark, flowers and fruits, and is not in an advanced stage of decomposition.

**Logging Slash:** Logging residue composed of trees, tops and branches removed from the merchantable trunk and typically left at the site.

**Low (wet, i.e. subject to holding water):** Forest or other habitat which usually is in an area physically lower than the surrounding area, and which as a result tends to collect and hold surface water for a period of time. Soils are often hydric and vegetation may be partially characteristic of wetlands.

**Mature forest:** The stage of forest development during which the age of trees is usually greater than 80 years, depending on species composition. Small gaps become more common as trees die, allowing full sunlight to reach portions of the mid- and under-stories. This stage contains the largest trees within a forest and provides the highest capacity for large snags, large live cavities, and den trees. The presence of large downed woody material is highest during this period. Old-growth forests occur during the later periods of this seral stage.

**Mast:** The fruit of trees suitable as food for wildlife.

**Mature / Maturity:** The stage at which a tree or other plant has attained full development and is in full seed production.

**Meandering:** Following a winding, intricate course.

**Mesic:** Refers to environmental situations characterized by moderately moist conditions.

**Mesophytic:** Refers to plants which grow under moderately moist conditions.

**Microclimate:** The climatic conditions within a small or local habitat that is well defined.

**Mid-age forest / mid-seral stage:** The stage of forest development during which distinct overstory, midstory, and understory canopies are present. The age of trees range from about 20 years to about 90 years depending on the species composition. Trees are usually greater than 10 inches dbh. This stage provides capability for hard mast production, large standing snags, and live cavities.

**Midstory:** The middle story or layer of a three-storied tree canopy.

**Mixed-age stand:** A stand composed of trees of two or more ages.

**Moderate shade:** A condition characterized by the presence of a partial barrier to direct sunlight, allowing only moderate light levels to reach the species. Barriers include a partially closed upper canopy, partially closed-canopy shrub layers, rock formations, and physical settings such as moderately steep, somewhat narrow valleys.

**Moist:** Characterized by the presence of free water in the soil, sufficient to distinctly darken the soil's hue.

**Neutral substrate:** A layer of surface material that has a pH value equal or close to 7.0, and generally not saturated with either base cations or acid anions.

**Old growth condition:** An ecosystem distinguished by old trees and related structural attributes. Old growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics including tree size, accumulation of large dead woody material, number of canopy layers, species composition, and ecosystem function. Old growth is not necessarily virgin or primeval. It can develop over time following human disturbances, just as it does following natural disturbances. Old growth encompasses both older forests dominated by early seral species and forests in later successional stages dominated by shade tolerant species.

**Open:** A condition in which little or no barrier exists to prevent sunlight from reaching the species. Generally this condition is found in non-forested habitats, but may be present in a mosaic pattern in a woodland or forest with a very open canopy.

**Open forest canopy:** A forest canopy in which adjacent crowns of canopy trees (i.e. largest trees) do not touch or are sparse enough to allow large amounts of sunlight to reach the understory layers or the ground.

**Open midstory / understory:** A forest stand that contains few trees and saplings beneath the canopy layer and is generally dominated by only a canopy layer and a low shrub/forb community.

**Outslope:** The feature of a road surface, established during construction or maintenance, that slants the roadbed to the outer or downhill side to facilitate drainage of storm runoff from the road in more diffuse flow than occurs at dips and waterbars. Outsloped road designs contrast to crowned roadbeds or to insloped surfaces angled toward a ditchline.

**Overstory:** The portion of the trees that form the uppermost canopy layer in a forest of more than one story.

**Particulate matter:** Minute particles of organic or inorganic materials.

**Percolate / Percolation:** Downward flow or infiltration of water through the spaces between rocks or particles of soil.

**PETS species:** Federally listed **P**roposed, **E**ndangered, **T**hreatened or **R**egionally **S**ensitive species.

**Perennial stream:** Any stream that normally contains water year-round. Perennial streams may have subsurface flow.

**Pesticide:** A substance that destroys pests; e.g. insecticide or herbicide.

**Plankton:** Free-swimming or floating animal and plant life generally dependant upon water current for locomotion.

**Plant community:** A vegetative complex unique in its combination of plants occurring in a particular location under particular influences.

**Pool:** An area of stream that is deep and has low current velocity relative to the main stream.

**Planning area:** The planning area is defined as the National Forest System lands addressed in the Forest Plan for the Daniel Boone National Forest.

**Prescribe burning / fire:** Fire used as a management tool within a defined area and under specific conditions to obtain benefits to one or more objectives of silviculture, wildlife and plant management or hazard reduction.

**Prescription:** The formal plan of action to carry out treatment of an area to achieve specific objectives.

**Proposed:** A species that has been proposed and is being reviewed for listing as Endangered or Threatened by the U.S. Fish and Wildlife Service.

**Regeneration area:** The early seral stage of a developing forest during the period beginning when tree cutting or disturbance results in full sunlight to the forest floor to when the crowns of tree species intercept most sunlight. Grasses and herbs are plentiful during the first 1 to 3 years.

**Riffle:** The faster moving, shallow portion of a stream, whose surface is broken by the substrate .

**Riparian:** Of, pertaining to, or situated on the banks of a stream body of water, or other perennial aquatic environments.

**Riparian Management Area (RMA):** No single feature is used to delineate boundaries of the RMA. The dimensions of the RMA are determined by on-site inspection and analysis using features of soil, landform, and vegetation. Characteristics indicative of the riparian prescription area are: 1. soils (dark colored alfisols, entisols, inceptisols, and mollisols); 2. landform (the floodplain and first terrace); 3. Vegetation (the presence of wetland plants classified as obligates or facultative wetland species). The RMA is managed to achieve or maintain desired conditions for riparian-dependent ecological processes and species. It is not classified as suitable for timber production. The RMA does not include riparian areas where legal or administrative mandates, e.g., wilderness or research natural area designation, may restrict certain activities.

**Rotation:** The planned number of years between the regeneration of a stand and its final cutting at a specified stage.

**Salvage cutting:** The cutting of trees that are dead, dying, or deteriorating.

**Second-growth:** A group of trees which was regenerated naturally, usually as a result of cutting or fire.

**Secondary (cavity) users:** A species that utilizes habitat (e.g. burrows, holes, tunnels) created by another species.

**Sensitive species:** A species designated by the USDA Forest Service Regional Forester as being locally rare in portions of its range within the South.

**Seep:** A flow of water above ground level that occurs where the water table intercepts the ground surface. Where the flow from a spring is not distinct (i.e. obvious trickles are not present) but tends to be somewhat dispersed, the flow is correctly termed a 'seep'.

**Seral stage:** One step in a series of steps in the process of ecological succession.

**Shade-intolerant:** Plant species that do not germinate or grow well in the shade.

**Shade-tolerant:** Plant species that grow well in shade.

**Shelterwood:** Any regeneration cutting designed to establish a new stand of trees under the protection of the remnants of the old stand.



**Shrub:** A woody plant which branches below or near ground level into several main stems, having no main trunk. It may be deciduous or evergreen. At the end of each growing season there is no die-back of the stem.

**Sinkhole:** A geologic feature, typically within karst topography, that may provide a direct connection between the land surface and groundwater.

**Snag:** A standing dead tree from which the leaves and most of the limbs have fallen. Such a tree may be at its original height or have been broken off.

**Sphagnum:** A genus of mosses, distributed worldwide, that are found, often abundantly, in wet, acidic, habitats (bogs, marshes, pools, moors, wet woodland, damp grassland, etc.) There are many species, which are often difficult to distinguish. The plants are characteristically branched, with branches in fascicles of 2-8. The leaves are nerveless and composed of two main types of cells: narrow, green, living cells, and inflated, colourless dead cells. The dead cells readily fill with water, allowing the plant to hold many times its own weight of water. The capsules are roughly spherical, when ripe, the capsule wall shrinks when it dries, increasing the internal pressure until the lid is blown off, ejecting the spores.

**Stand:** Plant communities particularly of trees, sufficiently uniform in composition, constitution, age, spatial arrangement, or condition to be distinguishable from adjacent communities. Also may delineate a silvicultural or management entity.

**Sterile:** Of an organism, unable to produce reproductive structures. Of land or environment, unable to support growth of plants or other living organisms.

**Streamside Management Zone (SMZ):** A designated area that consists of the stream itself and an adjacent area of varying width (riparian area) where management practices that might affect water quality, fish or other aquatic resources are modified. The SMZ is an area of closely managed activity, not an area of exclusion. It may provide an effective filter and absorptive zone for sediments, nutrients and pesticides; maintain streamside shade; protect channels, streambanks and maintain aquatic habitats; and promote floodplain stability.

**Stream orders:** A method of categorizing streams according to their size. First order streams are unbranched usually found at the head of drainage basins. Stream order increases by one, as a stream flows into a stream of equal or greater size (e.g. second order streams are formed when two first order streams come together).

**Substrate:** The material comprising the bottom of a stream. It can vary from fine silt and sand to cobble, boulder and bedrock. The sizes of each are given below.

Silt/clay - <.062 mm

Sand - .062 mm – 2.0 mm (sub-classes: very fine [.062 - .125]; fine [.125 - .25]; Medium [.25 - .50];

Coarse [.50 – 1.0]; Very Coarse [1.0 – 2]

Gravel - 2 mm – 64 mm (sub-classes: very fine [2 – 4]; fine [4 – 5.7]; fine [5.7 – 8]; Medium [8 – 11.3]; Medium [11.3 – 16]; Coarse [16 – 22.6];

	Coarse [22.6 – 32]; Very Coarse [32 – 45]; Very Coarse [45 – 64]
Cobble - 64 mm – 256 mm	Sub-classes: small [64 –90]; small [90 – 128]; large [128 – 180]; large [180 – 256]
Boulder - 256 mm – 2048 mm	(sub-classes: small [256 – 362]; small [362 – 512]; medium [512 – 1024]; large-very large [1024 – 2048])
Bedrock - Bedrock	

**Subsurface filter strip:** An area of land in which soil water moves, and where chemicals are removed from interflow by soil adsorption and plant uptake.

**Succession:** The changes in vegetation and in animal life that take place as the plant community evolves from bare ground to climax.

**Swamp:** An area characterized by woody vegetation and soil saturated by flowing water.

**Talus:** The accumulation of broken rocks that occurs at the base of cliffs or other steep slopes.

**Texture:** In soils, the relative amounts of silt, clay, and sand that affect drainage and plant growth.

**Threatened species:** A species officially designated by the U.S. Fish and Wildlife Service as having its existence threatened in a localized area, such as State or province or lesser area, because its habitat is threatened with destruction, drastic modification, or server curtailment, or because of overexploitation, disease, predation, or other factors.

**Turnout:** Extensions of a road ditch into a vegetated area that provide for the dispersion and infiltration of stormwater runoff.

**Understory:** Trees and other woody species growing under a more or less continuous cover of branches and foliage formed collectively by the upper portion of adjacent trees and other woody growth.

**Uneven-aged management:** A system of forest management in which stands are produced or maintained with an intermingling of trees that differ markedly in age.

**V-shaped:** [v-shaped valley] A valley having a pronounced cross profile suggesting the form of the letter “V”, characterized by steep sides and short tributaries; specifically a young, narrow, valley resulting from downcutting by a stream. The “V” becomes broader as the amount of mass wasting increases

**Viable:** A population which has the estimated numbers and distribution of reproductive individuals to insure its continued existence and distribution within the planning area.

**Warm Water:** Streams with summer water temperatures ranging from 80 to 85 degrees and winter water temperatures of 40 to 60 degrees.

**Waterbar:** A mound or ridge of soil built across a light-duty road, skid road or trail, or fireline, for the purpose of diverting water off the surface and onto porous forest soil.

**Waterbody:** Any river, creek, slough, canal, lake, reservoir, pond, sinkhole, or other natural or artificial watercourse that flows within a defined channel or is contained within a discernable shoreline.

**Wetland:** An area that is inundated by surface or groundwater with a frequency sufficient to support a prevalence of vegetation that requires saturated or seasonally saturated soil.

**Wildfire:** An unplanned fire requiring suppression action, as contrasted with a prescribed fire which burns within prepared lines enclosing a designated area under prescribed conditions. A free-burning fire unaffected by fire suppression measures. A wildfire may be started by events such as arson, lightning, or escaped camp or brush fires.

**Windfall:** A tree uprooted or broken off by wind. Also an area in which the trees have been uprooted or broken by wind.

**Windthrow:** See windfall

**Xeric:** Refers to environmental situations characterized by dry conditions.